Missouri Department of Natural Resources

Total Maximum Daily Load Information Sheet

Elkhorn Creek

Waterbody Segment at a Glance:

County: Montgomery
Nearby Cities: Montgomery City
Length of impairment: 2 miles
Pollutant: Biochemical Oxygen Demand (BOD), Volatile Suspended Solids (VSS)
Source: Montgomery City Wastewater Treatment Plant

Also see Habitat Loss Information Sheet


State map showing location of watershed

TMDL Priority Ranking: High

Description of the Problem

Beneficial uses of Elkhorn Creek

- Livestock and Wildlife Watering
- Protection of Warm Water Aquatic Life
- Protection of Human Health (associated with Fish Consumption)

Use that is impaired

- Protection of Warm Water Aquatic Life

Standards that apply

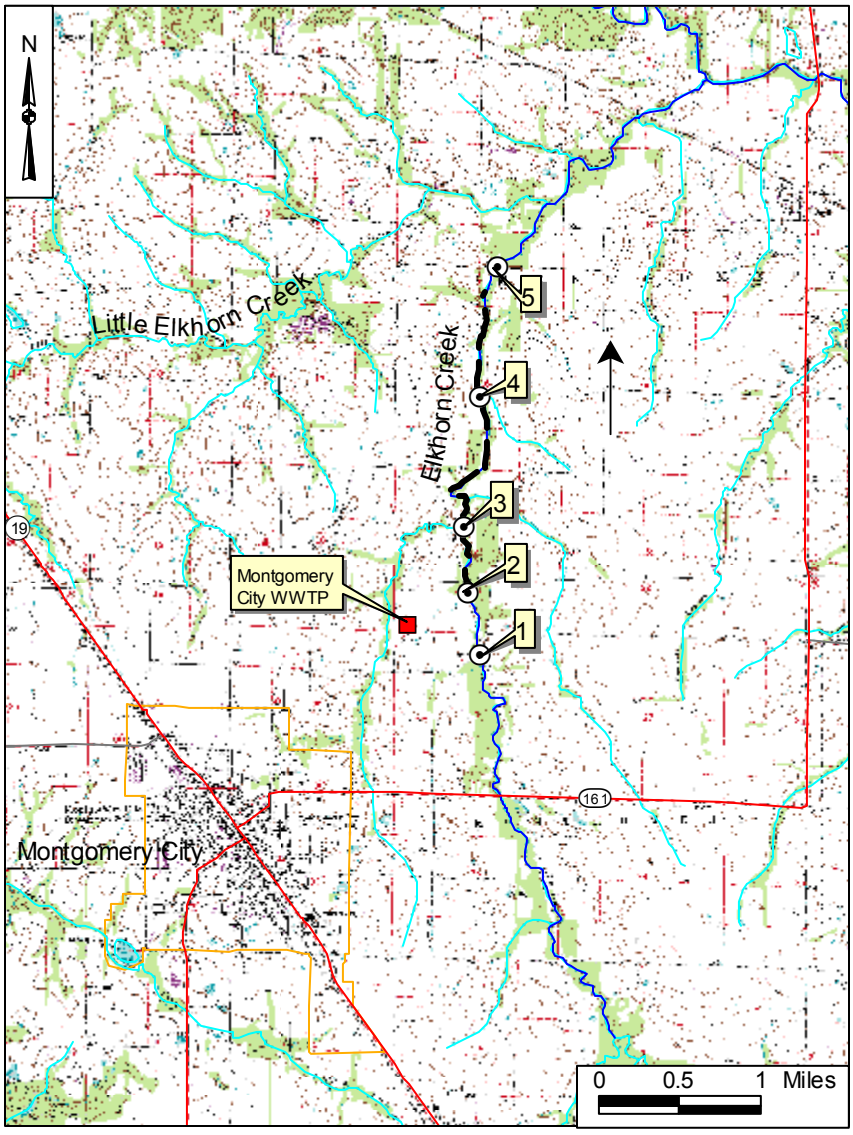
- The Missouri Water Quality Standard (WQS), found in 10 CSR 20-7.031 Table A, for dissolved oxygen (related to BOD) in streams is 5.0 mg/L (milligrams per liter or parts per million).
- Standards for Volatile Suspended Solids (VSS) may be found in the general criteria section of the WQS, 10 CSR 20-7.031(3)(A) and (C) where it states:
  - Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses.
  - Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses.

Background Information and Water Quality Data

This stream shows deposition of sewage solids and low levels of dissolved oxygen (a stream measurement that relates to Biochemical Oxygen Demand (BOD)) downstream from the Montgomery City wastewater treatment plant (WWTP). Wastewater high in BOD reduces the amount of dissolved oxygen in the stream's water. Most aquatic organisms require high levels of oxygen to survive. In

addition, VSS (suspended algae and sewage sludge) can settle onto the bottom of a stream and smother natural substrates (materials in the streambed), aquatic invertebrate animals (like crayfish and water insects) and fish eggs. Like all wastewater discharges in Missouri, the Montgomery City WWTP has to meet the requirements of a discharge permit issued by Missouri Department of Natural Resources. Changes will be made to the discharge permit that will improve the quality of the wastewater discharge. This, in turn, will improve the water quality in Elkhorn Creek.

Impaired Portion of Elkhorn Creek, Montgomery County, Missouri



Impaired Segment → Direction of flow

Index for Sampling Sites
1 – Elkhorn Creek upstream of Montgomery City WWTP
2 – Montgomery City WWTP effluent outfall
3 – Elkhorn Creek 0.5 mile downstream of Montgomery City WWTP
4 – Elkhorn Creek 1.5 miles downstream of Montgomery City WWTP
5 – Elkhorn Creek 2.5 miles downstream of Montgomery City WWTP

Results from Stream Survey for Elkhorn Creek– August 11, 1999

Site #	Flow (cu ft/sec)	Temperature (^{o}C) (am, pm)	Dissolved Oxygen – am (mg/l)	Dissolved Oxygen – pm (mg/l)	Specific Conductivity (mmhos/cm)	Ammonia Nitrogen (mg/l)	Nitrate Nitrogen (mg/l)	Total Phosphorus (mg/l)
1	0	21, 24	4.2	11.2	525	<0.05	0.05	0.08
2	0.23	22, 23	0.5	3.5	1655	15.3	<0.05	3.25
3		22, 24	0.4	14.0	1500	16.95	0.17	3.16
4		22, 26	0.7	11.0	1500	5.9	2.3	1.59
5	0.05	23, 24	6.5	7.1	1020	<0.05	1.04	0.6

Source: Missouri Department of Natural Resources

For more information call or write:

Missouri Department of Natural Resources
Water Protection Program
P.O. Box 176, Jefferson City, MO 65102-0176
1-800-361-4827 or (573) 751-1300 office
(573) 526-5797 fax
Program Home Page: www.dnr.mo.gov/wpscd/wpcp/index.html